

## Experimental Virology



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### Group Members

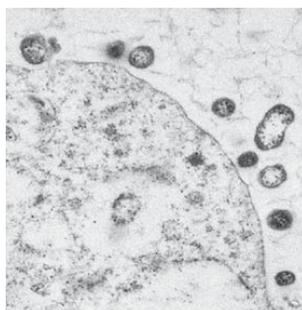
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### Immunity and pathogenesis in viral infection

Our research interests are centered around the interplay between virus and host, with special emphasis on persistent infection. In broad terms we investigate the following aspects thereof:

- B cell responses in persistent viral infection
- Role of alarmins in T cell immunity
- Virally vectored vaccines
- Viral triggers of autoimmune disease
- Mechanisms of viral pathogenesis

Thereby, our research portfolio covers both adaptive and innate immune defense, with viral infection as a common theme. We combine molecular virological techniques ("reverse genetics") for the engineering of infectious viruses with state-of-the-art mouse infection models, cutting-edge cellular immunological techniques and a broad range of molecular analytics. Although fundamental by character, the questions addressed have strong links to major unmet global health needs. In the mid- to long- term, this offers translational potential, notably for vaccination and treatment of persistent viral diseases such as human immunodeficiency virus (HIV), hepatitis B and C virus, as well as for select autoimmune disorders and cancer.



**Fig. 1:** Electron micrograph of lymphocytic choriomeningitis virus particles budding from a host cell.

### Selected Publications

- Fallet B, Narr K, Ertuna YI, Remy M, Sommerstein R, Cornille K, Kreutzfeldt M, Page N, Zimmer G, Geier F, Straub T, Pircher H, Larimore K, Greenberg PD, Merkler D, Pinschewer DD. Interferon-driven deletion of antiviral B cells at the onset of chronic infection. *Science Immunology*. 2016 October 21;1(4)
- Sommerstein R, Flatz L, Remy MM, Malinge P, Magistrelli G, Fischer N, Sahin M, Bergthaler A, Igonet S, Ter Meulen J, Rigo D, Meda P, Rabah N, Coutard B, Bowden TA, Lambert PH, Siegrist CA and Pinschewer DD. Arenavirus Glycan Shield Promotes Neutralizing Antibody Evasion and Protracted Infection. *PLoS Pathog*. 2015 Nov 20;11(11):e1005276
- Darbre S, Johnson S, Kallert S, Lambert PH, Siegrist CA, Pinschewer DD. The Nucleoprotein Is Required for Lymphocytic Choriomeningitis Virus-Based Vaccine Vector Immunogenicity. *J Virol*. 2015 Nov 15;89(22):11734-8
- Baumann C, Bonilla WV, Fröhlich A, Helmstetter C, Peine M, Hegazy AN, Pinschewer DD\*, Löhning M\*. Tbet- and STAT4-dependent IL-33 receptor expression directly promotes antiviral Th1 cell responses. *Proc Natl Acad Sci U S A*. 2015 Mar 31;112(13):4056-61
- Johnson S, Bergthaler A, Graw F, Flatz L, Bonilla WV, Siegrist CA, Lambert PH, Regoes RR, Pinschewer DD. Protective efficacy of individual CD8+ T cell specificities in chronic viral infection. *J Immunol*. 2015 Feb 15; 194(4):1755-62
- Kreutzfeldt M, Bergthaler A, Fernandez M, Brück W, Steinbach K, Vorm M, Coras R, Blümcke I, Bonilla WV, Fleige A, Forman R, Müller W, Becher B, Misgeld T, Kerschensteiner M, Pinschewer DD\*, Merkler D\*. Neuroprotective intervention by interferon- $\gamma$  blockade prevents CD8+ T cell-mediated dendrite and synapse loss. *J Exp Med*. 2013 Sep 23;210(10):2087-103